

### AMENDMENTS TO THE CLAIMS

1. **(Currently amended)** An open-pored biocompatible surface layer for an implant, which layer is arranged on a virgin surface of the implant, ~~characterised in that comprising:~~

~~the layer thickness of an~~ the open-pored surface layer with a thickness is in a range selected from the group consisting of the range from 0.1 mm to 2.5 mm inclusive, preferably in the range from 0.3 mm to 1.9 mm inclusive, and especially in the range from 0.5 mm to 1.5 mm inclusive; and

~~the porosity of the open-pored surface layer is in a range selected from the group consisting of the range from 20% to 85% inclusive, preferably in the range from 30% to 70% inclusive, and especially in the range from 35% to 65% inclusive.~~

2. **(Currently amended)** The sSurface layer according to claim 1, wherein characterised in that

the open-pored surface layer has pits or, especially etching pits, having a diameter in a range selected from the group consisting of the range from 0.1 µm to 2.5 µm inclusive, preferably in the range from 0.5 µm to 1.9 µm inclusive, and especially in the range from 0.8 µm to 1.5 µm inclusive.

3. **(Currently amended)** The sSurface layer according to ~~one of e~~ Claims 1 ~~or 2,~~ wherein characterised in that

the open-pored surface layer has a shallow roughening in the sub-micrometer ~~re~~ range.

4. **(Currently amended)** The sSurface layer according to claim 1, further comprising particles arranged on the implant surface, said particles selected from the group consisting of ~~one of the preceding claims, characterised in that~~

biocompatible particles, ~~especially of titanium dioxide~~ biocompatible particles, ~~and or calcium phosphate~~ biocompatible particles, ~~are arranged on the implant surface.~~

5. **(Currently amended)** The sSurface layer according to claim 4, wherein characterised in that

the biocompatible particles have a particle size in a range selected from the group consisting of the range from 0.01  $\mu\text{m}$  to 5  $\mu\text{m}$  inclusive, ~~preferably in the range from~~ 0.1  $\mu\text{m}$  and 3  $\mu\text{m}$  inclusive, and ~~especially in the range from~~ 0.2  $\mu\text{m}$  to 1  $\mu\text{m}$  inclusive.

6. (Currently amended) The sSurface layer according to ~~one of claims 1 to 3~~, wherein characterised in that

the open-pored surface layer consists substantially of a material selected from the group consisting of titanium, zirconium, niobium or tantalum.

7. (Currently amended) The sSurface layer according to ~~one of claims 1 to 4~~, wherein characterised in that

the open-pored surface layer is sintered.

8. (Currently amended) A mMethod of producing an implant selected from the group consisting of an open-pored coated implant, and especially a joint replacement implant, comprising characterised by the following steps:

~~—applying application of at least one layer of a biocompatible metal or an alloy thereof to a virgin surface of the implant, to produce an implant surface; and;~~

~~—producing production of a surface micro-structure on the implant surface by means selected from the group consisting of etching of the implant surface, —and/or application of fine biocompatible particles to the implant surface, and etching of the implant surface and application of fine biocompatible particles to the implant surface.~~

9. (Currently amended) The mMethod according to claim 8, wherein characterised in that

the biocompatible metal is applied by means of a vacuum plasma spraying method.

10. (Currently amended) The mMethod according to claim 8, wherein characterised in that

the biocompatible metal is applied by a technique selected from the group consisting of brushing, spreading, spraying, and a or like application techniques.

11. (Currently amended) The mMethod according to ~~one of claims 8 to 10~~, especially according to claim 10, characterised in that wherein

the at least one layer applied to the virgin surface of the implant is sintered.

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12. **(Currently amended)** The mMethod according to claim 11, wherein  
characterised in that

Materials selected from the group consisting of binders, ~~and/or~~ sintering  
adjuvants, and binders and sintering adjuvants are used.

13. **(Currently amended)** The mMethod according to claim 12, wherein  
characterised in that

as sintering adjuvant there is used a sintering adjuvant metal which, together with  
the biocompatible metal or alloy thereof, forms a eutectic selected from the group  
consisting of low-melting eutectic, especially silicon, or cobalt, and a eutectic preferably  
in elemental powder form.

14. **(Currently amended)** The mMethod according to ~~one of~~ claims 11 wherein  
to 13, characterised in that

sintering is carried out *in vacuo*.

15. **(Currently amended)** The mMethod according to ~~one of~~ claims 11 wherein  
to 14, characterised in that

sintering comprises a phase selected from the group consisting of a debinding  
phase, a ~~and/or~~ dehydrogenation phase, and a debinding and dehydrogenation phase.

16. **(Currently amended)** The mMethod according to ~~one of~~ claims 11 wherein  
to 15, characterised in that

a sintering temperature in a range selected from the group consisting of in the  
range from 800°C to 1500°C inclusive, ~~preferably in the range from 950°C to 1400°C~~  
inclusive, and especially in the range from 1000°C to 1350°C inclusive is used.

17. **(Currently amended)** The mMethod according to ~~one of~~ claims 8 wherein to 16,  
characterised in that

the biocompatible metal is used in a form selected from the group consisting of  
powder form ~~and, especially in the form of an angular powder.~~

18. **(Currently amended)** The mMethod according to ~~one of~~ claims 8 wherein to 17,  
characterised in that

a layer thickness of the open-pored surface layer in a range selected from the  
group consisting of the range from 0.1 mm to 2.5 mm inclusive, ~~preferably in the range~~

from 0.3 mm to 1.9 mm inclusive, and ~~especially in the range from 0.5 mm to 1.5 mm~~ is produced.

19. **(Currently amended)** ~~The mMethod according to one of claims 8 wherein to 18,~~  
characterised in that

the biocompatible metal applied to the virgin surface of the implant has a particle size in a range selected from the group consisting of the range from 50 µm to 800 µm inclusive, ~~preferably in the range from 100 µm to 650 µm inclusive~~, and ~~especially in the range from 200 µm to 550 µm inclusive~~.

20. **(Currently amended)** ~~The mMethod according to one of claims 8 wherein to 19,~~  
characterised in that

the biocompatible metal is selected from the group consisting of titanium, zirconium, niobium, and/or tantalum.

21. **(Currently amended)** ~~The mMethod according to claim 8, wherein one of claims 10 to 20, characterised in that~~

the biocompatible metal is used in the form of a metal hydride powder.

22. **(Currently amended)** ~~The mMethod according to claim 8, wherein one of claims 8 to 21, characterised in that~~

the etching of the implant surface is carried out by means of a technique selected from the group consisting of acid (bath) etching, and/or by means of plasma etching, especially oxygen plasma etching, acid (bath) etching and plasma etching, and acid (bath) etching and oxygen plasma etching.

23. **(Currently amended)** ~~The mMethod according to claim 8, wherein one of claims 8 to 22, characterised in that~~

the fine biocompatible particles have a particle size in a range selected from the group consisting of the range from 0.01 µm to 5 µm inclusive, ~~preferably in the range from 0.1 µm to 3 µm inclusive~~, and ~~especially in the range from 0.2 µm to 1 µm inclusive~~.

24. **(Currently amended)** ~~The mMethod according to claim 8, wherein one of claims 8 to 23, characterised in that~~

the fine biocompatible particles are applied by a sol-gel method using a binder selected from the group consisting of a binder and, preferably a silicate-based binder.

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25. (Currently amended) ~~The mMethod according to claim 8, wherein one of claims 8 to 24, characterised in that~~

A material selected from the group consisting of titanium dioxide, calcium phosphate, and ~~or~~ another biocompatible material is used as material for the fine biocompatible particles.

26. (Currently amended) An iMplant having, ~~especially a joint replacement implant, characterised by a surface layer according to claim 1 one of claims 1 to 7.~~

27. (Currently amended) Use of a surface layer according to ~~one of claims 1 to 7~~ for an implant selected from the group consisting of femoral stems, a sockets for a hip joints, a femoral components for a knee joint replacement, a tibial components for a knee joint replacement, a components for a shoulder joint replacement, a components for an elbow joint replacement, a components for a toe joint replacement, a components for a finger joint replacement, for a component for the fusion of vertebral bodies of the lumbar spine, for a components for an intervertebral disc replacement, for a transgingival implant systems, for an orthodontic implant systems, and a tooth (replacement) implants.

28. (New) The implant according to claim 26, wherein the implant is a joint replacement implant.